Ch 11 Measuring Length and Area

11.1 Area of Triangles and Parallelograms
11.2 Area of Trapezoids, Rhombi and Kites

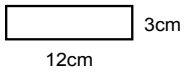
Area of a rectangle = bh

Area of a square = s^2

Area of a parallelgram = bh

Base and height are perpendicular

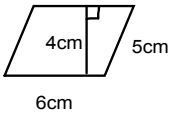
Example 1



$A = 36cm^2$

$P = 30cm$

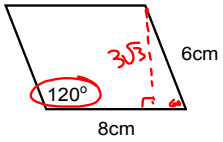
Example 2



$A = 4 \cdot 6 = 24cm^2$

$P = 22cm$

Example 3



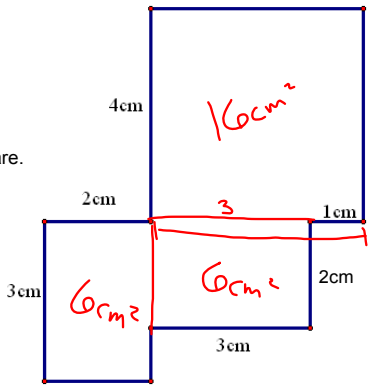
30 60 90
3 3√3 6

$A = 8 \cdot 3\sqrt{3}$
$24\sqrt{3}cm^2$

$P = 28cm$

Example 4

Assume all segments that appear perpendicular are.

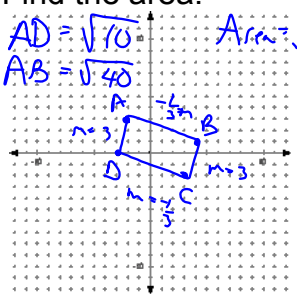


$A = 28cm^2$

Example 5

A (-2, 3)
B(4,1)
C(3, -2)
D(-3,0)

What shape is it? Rect.
Find the area.

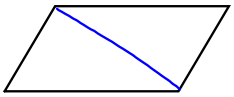


$\overline{AB}$ $m = -\frac{1}{3}$

$\overline{AD}$ $m = 3$

$AD = \sqrt{10}$
$AB = \sqrt{40}$

$Area = \sqrt{10}\sqrt{40}$
$\sqrt{400}$
$20\ u^2$



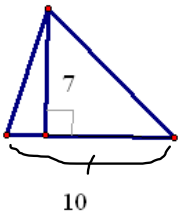
What is the area of this shape?
Cut it in half.

Area of a Triangle= ½ bh

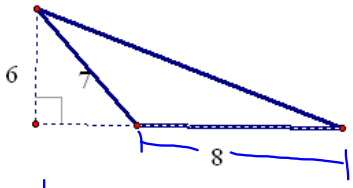
Example 1

$A = \frac{1}{2} 7 \cdot 10$

$35 u^2$



Example 2



$A = \frac{1}{2} 6 \cdot 8$

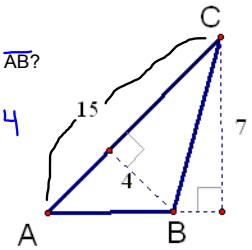
$= 24 u^2$

Example 3

What is the length of $\overline{AB}$?

$Area = \frac{1}{2} 15 \cdot 4$

$Area = 30 u^2$



$30 = \frac{1}{2} AB \cdot 7$

$8.6 u = AB$

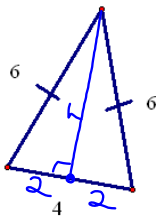
Example 4

$36 = 4 + h^2$

$4\sqrt{2} = h$

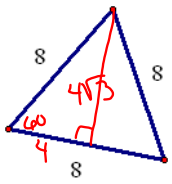
$A = \frac{1}{2} 4 \cdot 4\sqrt{2}$

$= 8\sqrt{2} u^2$



Example 5

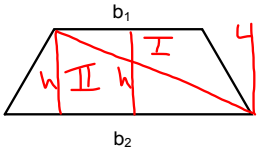
$A = 16\sqrt{3} u^2$



Area of an Equilateral Triangle $= \frac{s^2\sqrt{3}}{4}$

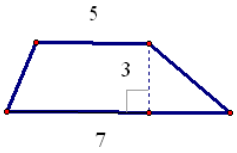
$\frac{64}{4}$

$16\sqrt{3}\ u^2$



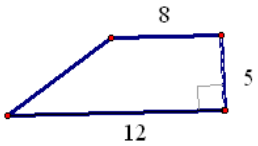
$\frac{1}{2}b_1h + \frac{1}{2}b_2h$

$A = \frac{1}{2}h(b_1+b_2)$



$A = \frac{1}{2}3(5+7)$

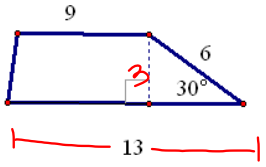
$= 18\ u^2$



$A = \frac{1}{2}5(8+12)$

20

$A = 50\ u^2$



$A = \frac{1}{2}3(9+13)$

22

$A = 33\ u^2$

R(4, 2)
S(6, -1)
T(-2, -1)
U(-1, 2)

Area of a Rhombus = ½ $d_1 \cdot d_2$

Area of a Kite = ½ $d_1 \cdot d_2$

M(0, 1) MNPR is a rhombus
N(4, 2)
P(3, -2)
R(-1, -3)

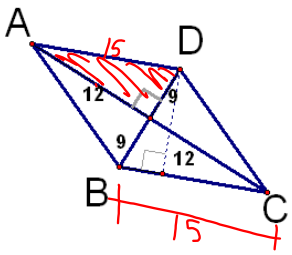
$MP = \sqrt{\quad} = 3\sqrt{2}$

$NR = \sqrt{(4-(-1))^2 + (2-(-3))^2} = \sqrt{50} = 5\sqrt{2}$

$A = \frac{1}{2}\, 3\sqrt{2} \cdot 5\sqrt{2}$

$\frac{1}{2}\, 15 \cdot 2$

$A = 15\ u^2$



What is the area of the rhombus?

$\frac{1}{2}\, 18 \cdot 24 = 216\ u^2$

What is the height of the rhombus?

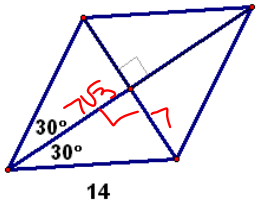
$A = bh$

$216 = 15 \cdot h$

$14.4\ u = h$

$BC^2 = 9^2 + 12^2$

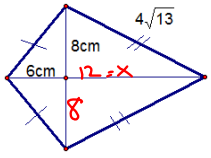
$BC = 15$



What is the area of the rhombus?

$A = \frac{1}{2} \cdot 14 \cdot 14\sqrt{3}$

$A = 98\sqrt{3}\ u^2$



$A = \frac{1}{2}\, 16 \cdot 18$

$144\ cm^2$

$(4\sqrt{13})^2 = 8^2 + x^2$

$16 \cdot 13$

$12 = x$